

107



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
 United States Patent and Trademark Office
 Address: COMMISSIONER FOR PATENTS
 P.O. Box 1450
 Alexandria, Virginia 22313-1450
 www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/577,601	05/25/2000	Sheena M. Loosmore	1038-1026 MIS:jb	6428

24223 7590 07/13/2004

SIM & MCBURNEY
 330 UNIVERSITY AVENUE
 6TH FLOOR
 TORONTO, ON M5G 1R7
 CANADA

EXAMINER

LUCAS, ZACHARIAH

ART UNIT	PAPER NUMBER
----------	--------------

1648

DATE MAILED: 07/13/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/577,601	Applicant(s) LOOSMORE ET AL.	
	Examiner Zachariah Lucas	Art Unit 1648	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 May 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 4-6, 8-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 4-6 and 8-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Status of the Claims

1. A request for continued examination (RCE) under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on May 17, 2004 has been entered.

2. Currently, claims 4-6, and 8-12 are pending and under consideration in this application. In the prior action, the Final action mailed on November 17, 2003, claims 4-6, and 8-13 were pending and rejected. In the Response, filed with the RCE May 17, 2004, the Applicant amended claim 11, and cancelled claim 13.

3. It is noted that the Applicant has indicated in the claim listing that claims 14-43 are withdrawn from the application. This is not accurate. These claims were cancelled from the application in the amendment of December 4, 2002.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Art Unit: 1648

5. **(New Rejection)** Claims 5, 6, 8-11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. These claims read on expression vectors encoding “a non-proteolytic analog of a Haemophilus Hin47 protein.” It is not clear what is meant by the term “analog” in the claims.

The term “analog” is defined in the art as “One of two organs or parts in different species of animals or plants that differ in structure or development but are similar in function.” Stedman's Online Medical Dictionary, 27th Edition. The specification teaches that the Hin47 protein is also known as HtrA. App., page 11. The art teaches that this protein is a member of a related family of proteins, referred to as HtrA or DepG proteins. See e.g., Spiess et al., Cell 97:339-47 at 339; and Foccio et al., J Biol Chem 275: 2581-88 at 2281. There is no specific definition for the term “analog” presented in the present application. Thus, the term analog would be understood by those in the art to read on non-proteolytic versions of the Haemophilus Hin47 protein, or on non-proteolytic versions of other HtrA/DepG proteins from other organisms.

However, the claims also refer to mutations specific to the Hin47 protein. See e.g., claims 5 and 8. It is therefore unclear if the claims are limited to vectors encoding non-proteolytic Hin47 proteins, or if the claims are intended to cover non-proteolytic HtrA/DepG proteins from any source. Clarification is required.

6. **(New Rejection- Necessitated by Amendment)** Claim 8 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and

Art Unit: 1648

distinctly claim the subject matter which applicant regards as the invention. This claim is dependant on claim 7, which has been cancelled from the application. Because claim 7 is no longer pending, it is not clear what vector claim 8 is further describing. The claim is therefore indefinite.

For the purposes of this action, claim 8 will be treated as depending from claim 6, the claim from which cancelled claim 7 depended.

7. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

8. **(Prior Rejection- Maintained)** Claims 4, 12, and 13 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

In view of the cancellation of claim 13, the rejection is withdrawn as to this claim.

The Applicant traverses the rejection of claims 4 and 12 on the basis that no deposit is required to support these claims. With respect to claim 4, the Applicant argues that the prior patent 5,506,139, which has been incorporated by reference, teaches the making and cloning of the hin47 gene, and the generation of mutants thereof. However, while the patent teaches the making and use of the H91A hin47 mutant, there does not appear to provide the sequence of the entire plasmid identified as JB-3120-2 such that those in the art would be able to determine if they were in possession of the specific plasmid claimed, or such that those in the art could use

Art Unit: 1648

the specifically claimed plasmid. The traversal is therefore not found persuasive with respect to claim 4.

With respect to claim 12, the Applicant argues that there is support for the claim, drawn to plasmid DS-23422-2 by the description of plasmid BK-96-2-11 in the patent 6,335,182. However, it is first noted that there does not appear to be a specific sequence provided for the eEcoR I T7 H91A Hin47 fragment that was inserted into plasmid BK-96-2-11 to form plasmid DS-23422-2 as described on page 16 of the present application. Thus, even if the teachings in the parent patent were sufficient with respect to plasmid BK-96-2-11, these teachings alone, and particularly without deposit or a disclosure of the specific sequence of the inserted fragment and where it was specifically inserted into the base plasmid, do not provide adequate support for the claimed invention. It is further noted that, while the Applicant indicates that the plasmid BK-96-2-11 has been deposited, there is no statement regarding the availability of the deposited material as required under 37 CFR 1.808. The Applicant's arguments in traversal are therefore not found persuasive, and the rejection is maintained.

9. **(Prior Rejection- Maintained)** Claims 4, 12, and 13 were rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

In view of the cancellation of claim 13, the rejection is withdrawn as to this claim.

Art Unit: 1648

The Applicant traverses this rejection for the same reasons as indicated with respect to the enablement rejections above. The rejections of claims 4 and 12 are maintained for the reasons indicated above.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. **(Prior Rejection-Maintained)** Claims 5, 6, and 8 were rejected in the prior action under 35 U.S.C. 103(a) as being unpatentable over Bass et al, J. Bacteriology (Bass), 178:1154-61, in view of the 1998 article (Loosemore et al., Infection and Immunity, 66(3): 899-906), and U.S. Patent number 5,474,914, issued to Richard Spaete (the Spaete patent). The claims read on expression vectors for expression of a recombinant protein comprising nucleic acids encoding a non-proteolytic analog of the Hin47 protein (with substitutions at one of positions 91, 121, or 197), an additional recombinant protein, and comprising a regulatory element operatively connected each of the nucleic acids.

The Applicant traverses the rejection on the grounds that the prior art cited by the Office does not make a prima facie case of obviousness. In particular, the Applicant argues that the teachings of the references cited do not suggest or provide a reasonable expectation of success in the use of a recombinant non-proteolytic Haemophilus Hin47 as a chaperone protein such that

Art Unit: 1648

the art renders the claimed vector obvious. The Applicant notes that the teachings of Spiess and Faccio, cited in the prior action in support of the teachings of Bass, are primarily directed to the E. coli DepG protein (a homologue of the Haemophilus HtrA/Hin47 protein). The Applicant argues that, in view of the fact that Spiess and Faccio are primarily concerned with the E coli protein, those in the art would not have had a reasonable expectation of success in the use of the non-proteolytic Haemophilus Hin47 protein as a chaperone. This argument is not found persuasive.

The Bass reference indicates that the HtrA/DepG proteins of represent a family of proteins. As such, the teachings with reference to one such of these proteins would be indicative of the behavior of other members of the family. Such is demonstrated by the teachings of Loosmore (pages 901-902), which demonstrate similarities between the activity of the E coli and Haemophilus versions of the DepG/HtrA protein. As was described in the prior actions, the Bass reference is describing the activities and uses of the HtrA proteins generally, and indicates that these proteins, when they are not actively proteolytic, may act a chaperones. While Spiess and Foccio use the E coli protein as representative, the teachings of these references indicate that those in the art would expect similar behavior from the other member of the family. See e.g., Spiess, abstract, and page 339 right paragraph (discussing the DepG(HtrA) proteins generally, and indicating that the DepG protein is present in multiple bacterial species); and Foccio, abstract, pages 2581, and 2585-86 (generally discussing "bacterial HtrA", and not limiting the discussion to the E coli protein). The relationship between the E coli and Haemophilus proteins is further highlighted by the comparison of the two proteins in the Loosmore reference as indicated above. Thus, the art recognizes a relationship among the HtrA/DepG proteins, and

Art Unit: 1648

indicates that non-proteolytic HtrA proteins generally, and not those of any one specific bacterium, would be effective chaperones.

For these reasons, the Applicant's arguments in traversal are not found persuasive, and the rejection is maintained for the reasons above, and the reasons of record.

12. **(Prior Rejection- Maintained in part)** Claims 9-11 were rejected under 35 U.S.C. 103(a) as being unpatentable over Bass, in view of the 1998 article, and the Spaete patent, and further in view of Barenkamp and St. Geme III, Molecular Microbiology 19:1215-23 (Barenkamp), and U.S. Patent Number 6,335,182 (the 182 patent). These claims describe a an expression vector encoding a non-proteolytic Hin47 analog, a regulatory element, and an additional nucleic acid molecule encoding for another recombinant protein, wherein that recombinant protein is the Haemophilus influenzae Hia protein.

The Applicant traverses the rejection of the claims on two grounds. First, the Applicant argues that the 182 patent may not be properly applied under 103(a) because it is excluded by the provisions of 103(c) as it was commonly owned at the time the invention was made. This argument in traversal is found persuasive. The rejection is therefore withdrawn from claims 10 and 11, which require the teachings of the 182 patent to teach or suggest all of the claimed limitations.

The Applicant further traverses the rejection of claim 9 on substantially the same grounds presented with respect to the rejection of claims 5,6, and 8 above. The Applicant argues that the combination of the references cited above does not teach the use of the Hin47 protein as a

Art Unit: 1648

chaperone. For the reasons indicated above, this argument is not found persuasive. The rejection is therefore maintained with respect to claim 9.


Conclusion

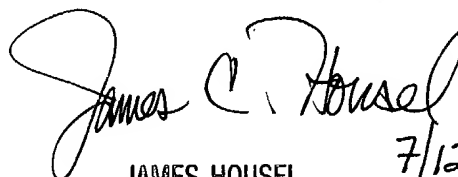
13. No claims are allowed.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Zachariah Lucas whose telephone number is 571-272-0905. The examiner can normally be reached on Monday-Friday, 8 am to 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James Housel can be reached on 571-272-0902. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Z. Lucas
Patent Examiner


JAMES HOUSEL
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1600
7/12/04